UNITED STATES PATENT AND TRADEMARK OFFICE

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FOLEY & LARDNER LLP
777 EAST WISCONSIN AVENUE
MILWAUKEE, WI 53202-5306

EXAMINER
BERHANU, SAMUEL

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE **3** MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _03/19/2007_.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _9 and 11-20_ is/are pending in the application.

   4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _9,11-15,19 and 20_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on _12 November 2003_ is/are: a)☒ accepted or b)☐ objected to by the Examiner.

   Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

   Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   a)☒ All b)☐ Some * c)☐ None of:

   1.☐ Certified copies of the priority documents have been received.

   2.☐ Certified copies of the priority documents have been received in Application No. _____.

   3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

   * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
   Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
   Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for

all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described
> as set forth in section 102 of this title, if the differences between the subject matter sought to
> be patented and the prior art are such that the subject matter as a whole would have been
> obvious at the time the invention was made to a person having ordinary skill in the art to which
> said subject matter pertains. Patentability shall not be negatived by the manner in which the
> invention was made.

2.   Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over

Mentgen et al. (US 2002/0101243) in view of Okda et al. (US 5,949,217), and in

view of Ng et. al. (US 2005/0089750), further in view of Ijntema et. al. (US

4,775,827)

Regarding Claim 9, Mentgen et al. disclose in Figures 1 and 2, a monitoring

device for energy storage batteries comprising: a computation device (22) for

determining the charge drawn by an energy storage battery starting from an

initial state of charge at the start of the drawing of the charge (Page 2, Paragraph

0022); wherein the computation device is desired to carry out a method

comprising: a method comprising determining the charge drawn by an energy

storage battery starting from an initial state of charge at the start of the drawing

of the charge (Paragraph 9, charging or discharging), the method comprising:

determining the charge drawn as a function of an exponential function (Page 1,

lines 1-25) with a time constant, wherein the time constant is defined at least as a

function of the energy storage battery type and of the temperature of the

electrolyte temperature (Paragraph 18, it is inherent that the measuring the

battery temperature incorporates the battery electrolyte, when the battery is hot

so as the electrolytes, the battery is made of these electrolytes and its

temperature is correlated with its electrolyte). However, Mentgen et al. do not

disclose a device for measuring battery temperature.

Okda et al. disclose in Figure 1, a device for measuring battery temperature

(Column 3, lines 5-9). It would have been obvious at the time of the invention to a

person having ordinary skill in the art to add a temperature measuring means in

Mentgen et al. device in order to avoid battery overheating.

Ng et. al. disclose paragraph 102 that the time constant is depend upon battery

type. It would have been obvious to a person having ordinary skill in the art at the

time of the invention to relate a time constant with battery type as taught by Ng

et. al. in Mentgen et. al. device in order to obtain a time constant as low as

possible in order to bring the battery at a specified operating rate with in a short

period of time. Mentgen et al, Okda et al., and Ng et. al. do not disclose explicitly,

determining the charge drawn as a function of charging time from the start of the

drawing of the charge. Ijntema et. al. discloses in Column 2, lines 25-45,

determining the charge drawn as a function of charging time from the start of the

drawing of the charge.

control means for controlling the adjusting means and the time-measuring
means. The operation of the device in accordance with the invention does not
require the measurement of charging and discharging currents but is based on an
adjusted and initially nominal discharging time and/or charging time for a
given capacity of the battery. The charge status is determined by measuring
the elapsed discharging time and/or charging time and expressing them as a
fraction of the nominal discharging time and/or charging time. In order to
preclude errors in the computed charge status due to deviations from the
nominal values of, for example, the charging and/or discharging currents the
computed charge status is compared with a measured actual charge status during
the discharging and/or charging of the battery. In the case of a difference
the computed charge status is corrected and the adjusted discharging or
charging time is also corrected, so that during the next discharging or
charging cycle of the battery the computed charge status will be closer in
conformity with the actual charge status.

It would have been obvious to a person having ordinary skill in the art at the time

of the invention to incorporate charging time to determine charge status of a

battery as taught by Ijntema et. al. in Mengen et. al. in order to preclude errors in

the computed charge status due to deviations from the nominal value.

3.   Claims 11-15 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Mentgen et al. (US 2002/0101243) in view of Hazel (5,381,096), and in view

of Ng et. al. (US 2005/0089750)

Regarding Claim 11, Mentgen et al. disclose in Figure 1, determining the

charge drawn as a function of an exponential function (Noted that soc is a

charging result and one of the weight function is expresses in exponential form,

please see formula 1 and 2) with a time constant, wherein the time constant is

defined at least as a function of the energy storage battery type and of the

temperature of the electrolyte (Page 2, Paragraph 18). However, Mentgen et al.

do not disclose a computer program code designed to carry out a method when

the computer program is run using a processor device, wherein the computer

program is a program file stored on a data storage medium (74) (Column 10,

lines 31-41). Hirzel discloses in Figure 8, a computer program code designed to

carry out a method when the computer program is run using a processor device,

where in the computer program is a program file stored on a data storage

medium (74) (Column 3, lines 46-49, Column 10, lines 31- 41). It would have

been obvious at the time of the invention to a person having ordinary skill in the

art to modify Mentgen et al. device and use a computer program as taught by

Hirzel in order to accurately calculates the state of charge of the battery.

Ng et. al. disclose   paragraph 102 that the time constant is depend upon battery

type. It would have been obvious to a person having ordinary skill in the art at the

time of the invention to relate a time constant with battery type as taught by Ng

et. al. in Mentgen et. al. device in order to obtain a time constant as low as

possible in order to bring the battery at a specified operating rate with in a short

period of time. Mentgen et al, Hazel, and Ng et. al. do not disclose explicitly,

determining the charge drawn as a function of charging time from the start of the

drawing of the charge. Ijntema et. al. discloses in Column 2, lines 25-45,

determining the charge drawn as a function of charging time from the start of the

drawing of the charge.

control means for controlling the adjusting means and the time-measuring
means. The operation of the device in accordance with the invention does not
require the measurement of charging and discharging currents but is based on an
adjusted and initially nominal discharging time and/or charging time for a
given capacity of the battery. The charge status is determined by measuring
the elapsed discharging time and/or charging time and expressing them as a
fraction of the nominal discharging time and/or charging time. In order to
preclude errors in the computed charge status due to deviations from the
nominal values of, for example, the charging and/or discharging currents the
computed charge status is compared with a measured actual charge status during
the discharging and/or charging of the battery. In the case of a difference
the computed charge status is corrected and the adjusted discharging or
charging time is also corrected, so that during the next discharging or
charging cycle of the battery the computed charge status will be closer in
conformity with the actual charge status.

It would have been obvious to a person having ordinary skill in the art at the time

of the invention to incorporate charging time to determine charge status of a

battery as taught by ljntema et. al. in Mengen et. al. in order to preclude errors in

the computed charge status due to deviations from the nominal value.

Regarding Claim 12, Mentgen et al. disclose the time constant is also

defined as a function of the state of charge at the start of the drawing of the

charge (Paragraph 18).

Regarding Claim 13, Mentgen et al. disclose the time constant is also defined

as a function of at least one of a charging voltage, a mean charging voltage and

a rated charging voltage (Page 1, Paragraph 9)

Regarding Claim 14, Mentgen et al. disclose in Equation 1 and 2 in page 1

paragraphs 6-9, the absolute amount of charge drawn according to the function

$$\Delta Q \approx (1 - e^{-t/\tau})(Q_o - Q_s),$$

where ΔQ is the absolute amount of charge drawn, Q_o is the defined rated

capacity of the energy storage battery, and Q_s is the initial charge of the energy

storage battery at the start of the drawing of the charge. (Page 1, paragraph 6-7)

Regarding Claim 15, Mentgen et al. disclose in Equation 1 and 2 in page 1

determining the relative state of charge of the energy storage battery with respect

to the rated capacity of the energy storage battery according to the function:

$Q_t (t)/Qo \approx 1 - (1 - Qs/Qo)^{-t/\tau}$

where $Q (t)/ Qo$ is the relative state of charge of the energy storage

battery, Qo is the rated capacity of the energy storage battery, and Qs is the

initial charge of the energy storage battery at the start of the drawing of the

charge (Page 1, paragraph 6-7).

4.   Claims 19 and 20 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Mentgen et al. (US 2002/0101243) in view of Okda et al. (US

5,949,217), and in view of Ng et. al. (US 2005/0089750), in view of Ijntema et. al.

(US 4,775,827), further in view of Hirzel (US 5,381,096)

Regarding Claim 19, Mentgen et al., Okada et. al. and Ng et. al. do not

disclose explicitly, a computer program comprising computer program code

designed to carry out the method when the computer program is run using a

processor device. However, Hirzel discloses in Figure 8, a computer program

code designed to carry out a method when the computer program is run using a

processor device. It would have been obvious at the time of the invention to a

person having ordinary skill in the art to modify Mentgen et al. device and use a

computer program as taught by Hirzel in order to accurately calculates the state

of charge of the battery.

Regarding Claim 20, Hirzel discloses where in the computer program is a

program file stored on a data storage medium (74) (Column 3, lines 46-49,

Column 10, lines 31- 41).

Response to Arguments

5.   Applicant's arguments filed 03/19/2007 have been fully considered but are

moot in view of the new ground(s) of rejection.

Conclusion

6.   Applicant's amendment necessitated the new ground(s) of rejection

presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**.

See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as

set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire

THREE MONTHS from the mailing date of this action. In the event a first reply is

filed within TWO MONTHS of the mailing date of this final action and the advisory

action is not mailed until after the end of the THREE-MONTH shortened statutory

period, then the shortened statutory period will expire on the date the advisory

action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be

calculated from the mailing date of the advisory action. In no event, however, will

the statutory period for reply expire later than SIX MONTHS from the date of this

final action.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Karl Easthom can be reached on 571-272-1989. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SB

KARL EASTHOM
SUPERVISORY PATENT EXAMINER